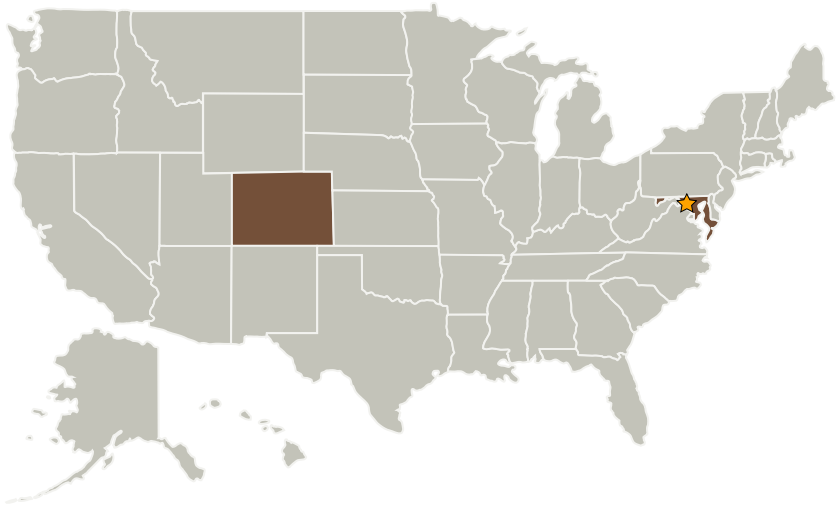
High-Performance Data Analysis Tools for Sun-Earth Connection Missions, Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

The Interactive Data Language (IDL) is a standard tool used by many researchers in observational fields. Present day Sun-Earch Connection missions like RHESSI or SOHO, or future missions, including the Solar Dynamics (SDO) almost exclusively analyze their data in IDL. However, the increasing amount of data produced by these missions, and the increasing complexity of image processing algorithms, requires higher computing power. Cluster computing is a cost-effective way to increase the speed of computation, but algorithms have to be modified to take advantage of parallel systems. Enhancing IDL to work on clusters gives scientists access to increased performance in a familiar programming environment. We propose to develop tools that enable IDL to profit from cluster systems. These tools will allow IDL applications to run in parallel without additional licenses. Finally, the parallelization will require no significant modification of the original programs. Enhanced data analysispower enables e.g. automatic image analysis on larger data sets. It can also help to reduce the response time to analyze data on demand,as desirable in virtual observatory environments. The wide spread of IDL allows scientists from other fields to profit from the increased execution speed.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Tech-X Corporation	Supporting Organization	Industry	Boulder, Colorado

Primary U.S. Work Locations	
Colorado	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

John R Cary

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.6 Ground Computing
    - TX11.6.7 High Performance Data Analytics Platform